1 **I/WE CLAIM:**

2 1. A method of engine starting in a gas turbine engine
3   comprising:

4   rotating the engine to provide an air flow into a
5   combustor of the engine;

6   injecting fuel into the combustor at a varying rate
7   until the engine is lighted-off, the varying rate
8   being a function of time and represented by a curve
9   having at least one high frequency with respect to a
10   light-off time, representing instant changes of the
11   rate for intersecting a light-off zone while
12   reducing a quantity of fuel injected into the
13   combustor; and then,

14   continuously injecting fuel into the combustor to
15   accelerate the engine to a self-sustaining operation
16   condition.

17 2.   A method as claimed in claim 1 wherein the curve
18   comprises a low frequency with respect to the light-off
19   time, representing a change trend of the varying rate.

20 3.   A method as claimed in claim 2 wherein the curve has an
21   increasing trend and comprises an oscillatory profile.

22 4.   A method as claimed in claim 2 wherein the curve has an
23   increasing trend and comprises a series of spikes.

1 5.   A method as claimed in claim 2 wherein the curve has an
2   increasing trend and comprises a squared-off wave
3   profile.

4 6.   A method as claimed in claim 2 wherein the curve has an
5   increasing trend and comprises a step profile.

6 7.   A method as claimed in claim 2 wherein the engine is
7   rotated at a varying speed as a function of time.

8 8.   A method as claimed in claim 6 wherein the engine is
9   rotated at an increasing speed.

10 9.   A method as claimed in claim 2 further comprising
11   introduction of a predetermined first fuel flow level
12   into the combustor prior to fuel injection at the
13   varying rate.

14 10. A method as claimed in claim 9 further comprising:
15   selecting a minimum engine speed to begin the
16   introduction of the predetermined first fuel flow level
17   for stating the engine under a variety of altitude and
18   temperature conditions.

19 11. A method as claimed in claim 10 further comprising:
20   sensing a temperature of the fuel to be injected into
21   the combustor;
22   sensing a temperature of the air flow to be provided
23   into the combustor;
24   sensing a forward flight velocity ram quantity;

1   sensing an ambient air pressure;

2   sensing the varying speed of the engine; and

3   processing the sensed data to determine the minimum
4   engine speed for the introduction of the
5   predetermined first fuel flow level.

6   12.   A method as claimed in claim 2 further comprising:
7   sensing a temperature of an exhaust gas flow to
8   determine if the light-off occurs.

9   13.   A method as claimed in claim 2 further comprising:
10   biasing a profile of the curve representing the varying
11   fuel injection rate according to changes in the altitude
12   and temperature conditions.

13   14.   A method as claimed in claim 2 further comprising:
14   changing the predetermined first fuel flow level
15   according to changes in the altitude and temperature
16   conditions.

17   15.   A method as claimed in claim 11 further comprising:

18   measuring a light-off time taken from the beginning of
19   the introduction of the predetermined first fuel
20   flow level, to the occurrence of the light-off; and

21   storing the measured light-off time and the sensed data
22   in a database for reference in a future engine
23   starting process when a search shows no data
24   associated with an altitude and temperature
25   condition, similar to a current altitude and

temperature condition generated in a previous light-off process and stored in the database.

16. A method as claimed in claim 15 further comprising:

changing a criterion of the minimum engine speed and the predetermined first fuel flow level to reduce the light-off time according to the stored data associated with the similar altitude and temperature condition, when such data is located in the database; and

storing data regarding the changes and the light-off time currently measured, and deleting the previously stored data of the minimum engine speed and the predetermined first fuel flow level and the previously stored light-off time associated with the similar altitude and temperature condition, when the current light-off time is shorter than the previously stored light-off time.